self at home. He repudiates Altmann's claims to priority with regard to the importance of cell granules. The description of the different types of leucocytosis and leucocythæmia is exceedingly good, and perhaps constitutes the most valuable section of the work. It is unfortunate that the translator has not seized the opportunity, as he has done in the case of Kanthack and Hardy's investigations, of referring to the very important work done by Muir on experimental leucocytoses and leucocythæmia. It is to him that we are indebted in the first place for the recognition of the "leucoblastic" type of marrow in experimental leucocytosis.

Ehrlich's chemiotactic theories with regard to the emigration of different cells from their seat of formation, the marrow, into the blood, and from the blood into the tissues, &c., are presented in a most interesting fashion, although, unfortunately, it is still impossible to speak about the etiology of medullary leucocythæmia in anything but the most indefinite way. To Dr. Myers' translation one can only refer in terms of praise. Perhaps it errs at places by being rather too literal. References to Jenner's eosin-methylene blue mixture, and to Kanthack and Hardy's work, are welcome additions made by the translator and editor. Confirmation and amplification of the very important investigations of Kanthack and Hardy, and Hardy alone, on the solution of oxyphil granules when cells containing the latter come in contact with chains of *B. anthracis*, &c., would be heartily welcomed by all who are interested in the subject of leucocyte secretions. T. H. MILROY.

BIOLOGY AT WOODS' HOLL, U.S.A.

Biological Lectures from the Marine Laboratory at Woods' Holl, U.S.A., for 1899. Pp. 282. (Boston: Ginn and Co., 1900.)

THE present volume, like all its predecessors, is replete with interest and full of testimony to the activity and good work of the Whitman School. It contains the reports of sixteen lectures, of which as many as four are for the first time botanical; and although among the zoological writers we miss the names of Whitman and one or two of the most tried among his earlier collaborateurs, the effects of their teaching and example are all evident. More especially is this the case with the lectures by C. M. Child on "The Significance of the Spiral Type of Cleavage," and by E. Thorndike on "Instinct," in which certain of Whitman's most famous conclusions receive support.

Conspicuous lectures are those by C. B. Davenport on "The Aims of the Quantitative Study of Variation," and by Jacques Loeb on "The Nature of the Process of Fertilisation," each in extension of work for which these investigators are now well known. The latter writer, dealing with facts which show that the process of fertilisation and development may be produced in the egg cell by the action of certain salts, to an advanced stage, would have us believe he has transferred the problem of fertilisation from the realm of morphology into the realm of physical chemistry. There is an important address by Alphæus Hyatt on "Some Governing Factors usually neglected in Biological Investigations," in which the uniformitarian hypothesis receives a check and a defence is set up of a law of "Tachygenesis" or "abbreviated development"; and there is incorporated in it a discussion on heredity, in its bearings on Ribot's argument that it is a "specific memory," and that a form of automatism is the link between memory and habit.

T. H. Morgan continues to write on "Regeneration," and among the lectures there are two which are noteworthy as embodying full bibliographies, of service for reference—viz. those by A. G. Mayer on "The Development of Colour in Moths and Butterflies," and by G. N. Calkins on "Nuclear Division in Protozoa." Interest amounting to novelty is greatest as concerns the work of C. H. Eigenmann on the breeding habits of the blind-fishes, the Amblyopsidæ, of the Mississippi Valley, in which the discovery that the bleached condition is assumed by the young even when reared in the light, is brought forward as evidence of hereditary establishment of an effect of the environment; and as concerning a lecture by H. S. Jennings on "The Behaviour of Unicellular Organisms," in which, from the fact that a multiplicity of causes may bring about similar reactions, it is argued that organisation and not the nature of the stimulus determines the result of experiment. Of the botanical lectures, that by D. H. Campbell on "The Evolution of the Sporophyte" furnishes an argument in favour of the abandonment of aquatic life having had a potent influence in its higher development, while another by D. P. Penhallow will be useful, as giving a succinct account of the alteration and carbonisation processes undergone by vegetable organisms during fossilisation. The remaining lectures are upon the effects of temperature and currents of air upon distribution, the significance of mycorrhizas, the associative processes in animals, and the "Physiology of Secretion"; and the *tout ensemble* gives promise of increased attention in the future to questions of cytology, in both their experimental and physiological aspects, with a leaning to those which involve philosophic principles and abstract ideas. No doubt much of the biological work of the next generation will be of this type, but in view of the probability that that may stand in danger of being overdone, and of the idea that nothing remains possible on the old lines, it may be said that in the very book under review there is reached the conclusion that "it is the individual which is the unit and not the cell." In the future, when everything will need to be gone over again under an advance in methods and a better understanding, the facts of mere anatomy—the value of which there is a growing tendency to depreciate—will assuredly prove as important and instructive as in the past. Our American brethren may do well to bear this in mind.

OUR BOOK SHELF.

Brief Guide to the Commoner Butterflies of the Northern United States and Canada. Being an Introduction to a Knowledge of their Life-histories. With Illustrations of all the Species. By Samuel Hubbard Scudder. Pp. xi + 210; 22 plates. (New York: Henry Holt and Co., 1899.)

OUR notice of the first edition of this work appeared in NATURE for August 10, 1893. This is not before us while writing; but as far as we can tell without actual comparison, the present edition, as regards the letter-